

ABSTRACT

Master's thesis: 98 pages, 12 figures, 5 tables, 6 appendix, 51 references.

Relevance. For efficient production organization and planning of the company must use appropriate economic and mathematical methods, including methods of scheduling theory. Nowadays task scheduling theory are very practically important. The rapid development of communications technology and increasingly necessitates construction schedules that are associated with the operation of industrial and service sector, education, transportation and many other areas. The problems of scheduling theory includes the study of computational complexity problems develop accurate, approximate and heuristic algorithms to solve them. The majority of works devoted to the development of combinatorial approaches. However, in practice, the possibility of combinatorial algorithms significantly limited dimension of tasks.

In this regard, urgent is the development of software for scheduling of tasks parallel devices with the same capacity that helps reduce the total cost for violating the deadline.

Purpose and objectives of the study. Improving the efficiency of scheduling by building optimal or near to optimal schedules and reducing total penalty for due date violating.

The following **tasks**:

- performing the known scheduling results review;
- developing an algorithm for minimizing total tardiness for common due date identical parallel machine scheduling;
- developing a software implementation of the algorithm in a form that can be used for schedule optimizing;
- performing an analysis of the results.

The object of study is the process of operational scheduling.

Subject of research: scheduling problems with common due data identical parallel machines.

Scientific novelty of the research

The approaches and methods of tasks implementation planning are developed for the first time with common due date of identical parallel machines using the concept of ideal circuit and Tabu search algorithms.

Publications. Materials published in the abstracts of the 19th International scientific-technical conference SAIT 2017 "System analysis and information technologies" [50], a scientific conference of students, undergraduates and graduate students "Informatics and Computer Science" - ICT-2017 [51], and accepted for publication at the International scientific conference "Science and innovations" Kyiv, May 30-31, 2017.

PARALLEL MACHINES, SCHEDULING, TABU SEARCH, MINIMIZING
TOTAL TARDINESS, COMMON DUE DATE